

CLAIMS

What is claimed is:

- 1 1. A method in a stacked system for associating errors detected at a user application
2 interface of one or more of a plurality of host systems with root cause errors at a stack
3 level below a virtualization layer, said method comprising the steps of:
4 detecting an error at a user application interface;
5 identifying an associated root cause error at a lower stack level;
6 creating an error trace entry for said error;
7 associating an error log identifier with said error trace entry;
8 forming said combined error log identifier and said error trace entry into an error
9 identifier that is unique within said plurality of host systems in said stacked system; and
10 communicating said error identifier to any requester of a service at a user
11 application interface of one or more of a plurality of host systems when said service
12 failed because of said root cause error.

- 1 2. The method as claimed in claim 1, wherein the step of making said combined
2 error log identifier and said error trace entry into an error identifier that is unique within
3 said plurality of host systems in said stacked system comprises:
4 combining an error trace entry and an error log identifier with an integer value to
5 make an error identifier that is unique within said plurality of host systems.

- 1 3. The method as claimed in claim 1, wherein the root cause error at a lower stack
2 level is in a peripheral device of said stacked system.

- 1 4. The method as claimed in claim 3, wherein said peripheral device is a storage
2 device.

1 5. The method as claimed in claim 1, wherein the stacked system comprises a
2 storage area network.

1 6. An apparatus for associating errors detected at a user application interface of one
2 or more of a plurality of host systems with root cause errors at a stack level below a
3 virtualization layer, said apparatus comprising:

4 an error detector for detecting an error at a user application interface;

5 a diagnostic component for identifying an associated root cause error at a lower
6 stack level;

7 a trace component for creating an error trace entry for said error;

8 an identifying component for associating an error log identifier with said error
9 trace entry;

10 a system-wide identification component to make said combined error log
11 identifier and said error trace entry into an error identifier that is unique within said
12 plurality of host systems in said stacked system; and

13 a communication component for communicating said error identifier to any
14 requester of a service at a user application interface of one or more of a plurality of host
15 systems when said service must be failed because of said root cause error.

1 7. An apparatus as claimed in claim 6, wherein the system-wide identification
2 component comprises:

3 a component for combining an error trace entry and an error log identifier with an
4 integer value to make an error identifier that is unique within said plurality of host
5 systems.

1 8. An apparatus as claimed in claim 6, wherein the root cause error at a lower stack
2 level is in a peripheral device of said stacked system.

1 9. An apparatus as claimed in claim 6, wherein said peripheral device is a storage
2 device.

1 10. An apparatus as claimed in claim 6, wherein the stacked system comprises a
2 storage area network.

1 11. A computer program product tangibly embodied in a storage medium to, when
2 loaded into a computer system and executed, cause said computer system to associate
3 errors detected at a user application interface of one or more of a plurality of host systems
4 with root cause errors at a stack level below a virtualization layer, said computer
5 program product comprising computer program code means for:

6 detecting an error at a user application interface;
7 identifying an associated root cause error at a lower stack level;
8 creating an error trace entry for said error;
9 associating an error log identifier with said error trace entry;
10 forming said combined error log identifier and said error trace entry into an error
11 identifier that is unique within said plurality of host systems in said stacked system; and
12 communicating said error identifier to any requester of a service at a user
13 application interface of one or more of a plurality of host systems when said service must
14 be failed because of said root cause error.